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*lit search*  
*5,906,223*  
*Reissue 09/930,737*

1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

5906223  
May 25, 1999

Chromatography valve assembly

REISSUE: August 15, 2001 - Reissue Application filed Aug. 15, 2001 (O.G. Oct. 23, 2001) Ex. Gp.: 3753; Re. S.N. 09/930,737 October 23, 2001

APPL-NO: 08715286

FILED-DATE: September 16, 1996

GRANTED-DATE: May 25, 1999

Selected file: PLUSPAT

**\*\* SS 1: Results 1**

1 / 1 PLUSPAT - @QUESTEL-ORBIT

PN - US5906223 A 19990525 [US5906223]  
TI - (A) Chromatography valve assembly  
PA - (A) ITT (US)  
IN - (A) PINKHAM LOUIS V (US)  
AP - US71528696 19960916 [1996US-0715286]  
PR - US71528696 19960916 [1996US-0715286]  
IC - (A) F16K-011/20  
EC - F16K-011/22  
F16K-027/00B  
G01N-030/20  
ICO - S01N-030/20E  
PCL - ORIGINAL (O) : 137597000; CROSS-REFERENCE (X) : 137884000  
DT - Corresponding document  
CT - US2209024; US2331133; US2804879; US3195726; US3670893; US3744376;  
US4287908; US4444215; US4596426; US4655095; US5238017; US5273075;  
US5277224; US5386472; US5427150  
STG - (A) United States patent  
  
AB - A unitarily formed diverter valve assembly for use in liquid chromatography. The valve assembly comprises a plurality of inlet and outlet ports, diverter valve systems, chambers, and a tortuous network of passageways all of which are arranged to accommodate the flow of fluids in a liquid chromatography system. The valve assembly is configured so as to direct the flow of fluid coming from an inlet port through the valve body where it can then be reversibly directed into or out of a chromatography column. On returning from the column, the fluid reenters the valve assembly where it is directed to an outlet port in order to exit the system. The valve assembly can also be configured so as to bypass the column altogether. Since the entire valve assembly is machined out of a single block of material having smooth liquid passageways, and since all flow compartments are shared and fully flushed when a flow-through valve is opened, dead-legs are virtually eliminated from the system.

1 / 1 LGST - @LEGSTAT

PN - US 5906223 [US5906223]  
AP - US 715286/96 19960916 [1996US-0715286]  
DT - US-P  
ACT - 19960916 US/AE-A  
APPLICATION DATA (PATENT)  
US 715286/96 19960916 [1996US-0715286]

19960916 US/AS02

ASSIGNMENT OF ASSIGNOR'S INTEREST

ITT INDUSTRIES, INC. 4 WST OAK LANE WHITE PLAINS, NEW YORK 10604 \*  
PINKHAM, L. : 19960910

19990525 US/A  
PATENT

20011023 US/RF  
REISSUE APPLICATION FILED  
20010815

UP - 2001-44

1 / 1 CRXX - ©CLAIMS/RRX  
PN - 5,906,223 A 19990525 [US5906223]  
PA - ITT Industries Inc  
ACT - 20010815 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20011023  
REISSUE REQUEST NUMBER: 09/930737  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3753

Reissue Patent Number:

1 / 1 PAST - ©Thomson Derwent  
AN - 200143-001800  
PN - 5906223 A [US5906223]  
OG - 2001-10-23  
ACT - REISSUE APPLICATION FILED

Selected file: INPADOC

**\*\* SS 1: Results 6**

1 / 6 INPADOC - ©INPADOC  
PN - AU 687715 B1 19980226 [AU-687715]  
TI - CHROMATOGRAPHY VALVE ASSEMBLY  
IN - PINKHAM LOUIS V  
PA - ITT  
AP - AU 37573/97-A 19970915 [1997AU-0037573]  
PR - US 715286/96-A 19960916 [1996US-0715286]  
IC - F16K-011/20; F16K-017/20

2 / 6 INPADOC - ©INPADOC  
PN - BR 9703655 A 19981110 [BR9703655]  
TI - CONJUNTO DE VALVULAS DE CROMATOGRAFIA  
IN - PINKHAM LOUIS V  
PA - ITT [US]  
AP - BR 9703655/97-A 19970729 [1997BR-0003655]  
PR - US 715286/96-A 19960916 [1996US-0715286]  
IC - F16K-011/00

1 / 1 LEGALI - ©LEGSTAT  
PN - BR 9703655 [BR9703655]  
DT - BR-P  
ACTE - 20011127 BR/FF [+]  
INTENTION TO GRANT  
20020416 BR/FG9A [+]  
PATENT OR CERTIFICATE OF ADDITION GRANTED  
UP - 2002-19

3 / 6 INPADOC - ©INPADOC  
PN - CA 2215554 AA 19980316 [CA2215554]  
TI - CHROMATOGRAPHY VALVE ASSEMBLY  
LA - ENG

IN - PINKHAM LOUIS V [US]  
PA - ITT [US]  
AP - CA 2215554/97-A 19970915 [1997CA-2215554]  
PR - US 715286/96-A 19960916 [1996US-0715286]  
IC - G01N-030/02; F16K-011/22; G01N-030/44

4 / 6 INPADO - @INPADO

PN - EP 829716 A1 19980318 [EP-829716]  
TI - CHROMATOGRAPHY VALVE ASSEMBLY  
LA - ENG  
IN - PINKHAM LOUIS V [US]  
PA - ITT MFG ENTERPRISES INC [US]  
AP - EP 97850114/97-A 19970715 [1997EP-0850114]  
PR - US 715286/96-A 19960916 [1996US-0715286]  
IC - G01N-030/20; F16K-011/22; F16K-027/00  
DS - AT\* BE\* CH\* DE\* DK\* ES\* FR\* GB\* IE\* IT\* LI\* NL\* SE\*

1 / 1 LEGALI - @LEGSTAT

PN - EP 829716 [EP-829716]  
AP - EP 97850114/97 19970715 [1997EP-0850114]  
DT - EP-P  
ACTE - 19970715 EP/AE-A  
EP-APPLICATION  
EP 97850114/97 19970715 [1997EP-0850114]

19980318 EP/AK-A1 [+]  
DESIGNATED CONTRACTING STATES IN AN APPLICATION WITH SEARCH  
REPORT:  
AT BE CH DE DK ES FR GB IE IT LI NL SE

19980318 EP/A1 [+]  
PUBLICATION OF APPLICATION WITH SEARCH REPORT

19980624 EP/17P [+]  
REQUEST FOR EXAMINATION FILED  
980416

19981202 EP/AKX [+]  
PAYMENT OF DESIGNATION FEES  
AT BE CH DE DK ES FR GB IE IT LI NL SE

19981202 EP/REV [+]  
DESIGNATED CONTRACTING STATES (CORRECTION):  
AT BE CH DE DK ES FR GB IE IT LI NL SE

20010829 EP/17Q [+]  
FIRST EXAMINATION REPORT  
20010716

UP - 2001-35

5 / 6 INPADO - @INPADO

PN - US 6112767 A 20000905 [US6112767]  
TI - CHROMATOGRAPHY VALVE ASSEMBLY  
IN - PINKHAM LOUIS V [US]  
PA - ITT [US]  
AP - US 311520/99-A 19990513 [1999US-0311520]  
PR - US 311520/99-A 19990513 [1999US-0311520]  
US 715286/96-A1 19960916 [1996US-0715286]  
IC - F16K-011/20

1 / 1 LEGALI - @LEGSTAT  
PN - US 6112767 [US6112767]  
AP - US 311520/99 19990513 [1999US-0311520]  
DT - US-P  
ACTE - 19990513 US/AE-A  
APPLICATION DATA (PATENT)  
US 311520/99 19990513 [1999US-0311520]  
  
20000905 US/A  
PATENT  
UP - 2000-39

6 / 6 INPADOC - @INPADOC  
PN - US 5906223 A 19990525 [US5906223]  
TI - CHROMATOGRAPHY VALVE ASSEMBLY  
IN - PINKHAM LOUIS V [US]  
PA - ITT [US]  
AP - US 715286/96-A 19960916 [1996US-0715286]  
PR - US 715286/96-A 19960916 [1996US-0715286]  
IC - F16K-011/20

1 / 1 LEGALI - @LEGSTAT  
PN - US 5906223 [US5906223]  
AP - US 715286/96 19960916 [1996US-0715286]  
DT - US-P  
ACTE - 19960916 US/AE-A  
APPLICATION DATA (PATENT)  
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19960916 US/AS02  
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\* PINKHAM, L. : 19960910  
  
19990525 US/A  
PATENT  
  
20011023 US/RF  
REISSUE APPLICATION FILED  
20010815  
UP - 2001-44

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